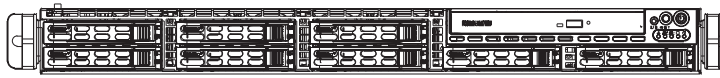
SUPERO®

SC113M Chassis Series



SC113MTQ-560CB SC113MTQ-360CB

USER'S MANUAL

1.0a

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Preface

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SC113M chassis. Installation and maintenance should be performed by experienced technicians only.

Supermicro's SC113M 1U chassis packages outstanding high-end performance into an astonishingly short 20" deep chassis, featuring advanced air-flow/thermal design for space-limited applications. With its short depth, it efficiently packages eight hot-swappable 2.5" SAS/SATA hard drive bays into a compact 1U form factor. This chassis features our advanced 360W/560W Silver Level, high-efficiency power supply.

This document lists compatible parts and configurations available when this document was published. Always refer to our Web site for updates on supported parts and configurations at http://www.supermicro.com

Manual Organization

Chapter 1: Introduction

The introduction provides a checklist of the main components included with this chassis and describes the main features of the SC113M chassis. This chapter also includes contact information.

Chapter 2: System Safety

This chapter lists warnings, precautions, and system safety. You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed before installing and servicing this chassis.

Chapter 3: Chassis Components

Refer here for details on this chassis model, including the fans, bays, airflow shields, and other components.

Chapter 4: System Interface

This chapter provides details on the system interface, which includes the functions and information provided by the control panel on the chassis, as well as other LEDs located throughout the system.

Chapter 5: Chassis Setup and Maintenance

Refer to this chapter for detailed information on this chassis. Follow the procedures given in this chapter when installing, removing, or reconfiguring your chassis.

Chapter 6: Rack Installation

Refer to this chapter for detailed information on chassis rack installation. You should follow the procedures given in this chapter when installing, removing or reconfiguring your chassis into a rack environment.

Appendix A: Chassis Cables

This section references cables, which are compatible with your SC113M system. Refer to our Web site for additional information on cabling at www.supermicro.com.

Appendix B: Power Supply

This chapter lists supported power supply information for your SC113M system. Refer to our Web site for additional details at www.supermicro.com.

Appendix C: SAS-113TQ

Refer to this chapter for supported backplane information. Refer to the Supermicro Web site at www.supermicro.com for the most up-to-date information.

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Chapter 1

Introduction

1-1 Overview

Supermicro's SC113M 1U chassis featues eight hot-swappable 2.5" SAS/SATA hard drive bays. Only SAS or enterprise HDDs are recommended. The SC113M chassis includes a 360W or a 560W high-efficiency power supply. One slim DVD-ROM drive is included on the SC113MTQ-560CB model, and is optional on the SC113MTQ-360CB model.

1-2 Shipping List

Please visit the following link for the latest shipping lists and part numbers for your particular chassis model. http://www.supermicro.com/products/chassis/1U/?chs=113M

Model	CPU	HDD	I/O Slots	Power Supply
SC113MTQ-560CB	Single/Dual CPU	8x 2.5" hot-swap SAS/SATA	1x FH	560W
SC113MTQ-360CB	Single CPU	8x 2.5" hot-swap SAS/SATA	1x FH	360W

1-3 Contacting Supermicro

Headquarters

Address:	Super Micro Computer, Inc. 980 Rock Ave. San Jose, CA 95131 U.S.A.
Tel:	+1 (408) 503-8000
Fax:	+1 (408) 503-8008
Email:	marketing@supermicro.com (General Information) support@supermicro.com (Technical Support)
Web Site:	www.supermicro.com

Europe

Address:	Super Micro Computer B.V. Het Sterrenbeeld 28, 5215 ML 's-Hertogenbosch, The Netherlands
Tel:	+31 (0) 73-6400390
Fax:	+31 (0) 73-6416525
Email:	sales@supermicro.nl (General Information) support@supermicro.nl (Technical Support) rma@supermicro.nl (Customer Support)

Asia-Pacific

Address:	Super Micro Computer, Inc. 4F, No. 232-1, Liancheng Rd. Chung-Ho 235, Taipei County Taiwan, R.O.C.
Tel:	+886-(2) 8226-3990
Fax:	+886-(2) 8226-3991
Web Site:	www.supermicro.com.tw

Technical Support:

Email:	support@supermicro.com.tw
Tel:	886-2-8226-1900

1-4 Returning Merchandise for Service

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service will be rendered. You can obtain service by calling your vendor for a Returned Merchandise Authorization (RMA) number. When returning to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

For faster service, RMA authorizations may be requested online (http://www.supermicro.com/support/rma/).

Whenever possible, repack the chassis in the original Supermicro carton, using the original packaging material. If these are no longer available, be sure to pack the chassis securely, using packaging material to surround the chassis so that it does not shift within the carton and become damaged during shipping.

This warranty only covers normal consumer use and does not cover damages incurred in shipping or from failure due to the alteration, misuse, abuse or improper maintenance of products.

During the warranty period, contact your distributor first for any product problems.

Notes

Chapter 2

System Safety

2-1 Overview

This chapter provides a quick setup checklist to get your chassis up and running. Following the steps in the order provided should enable you to have your chassis up and operational within a minimal amount of time. This quick setup assumes that you are an experienced technician, familiar with common concepts and terminology.

2-2 Warnings and Precautions

You should inspect the box the chassis was shipped in and note if it was damaged in any way. If the chassis itself shows damage, file a damage claim with carrier who delivered your system.

Decide on a suitable location for the rack unit that will hold that chassis. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated.

You will also need it placed near at least one grounded power outlet. When configured, the SC113M chassis includes both a primary and a redundant power supply which will require two grounded outlets.

2-3 Preparing for Setup

The SC113M chassis includes a set of rail assemblies, including mounting brackets and mounting screws you will need to install the systems into the rack. Please read this manual in its entirety before beginning the installation procedure.

2-4 Electrical Safety Precautions

Basic electrical safety precautions should be followed to protect yourself from harm and the SC113M from damage:

- Be aware of the locations of the power on/off switch on the chassis as well as the room's emergency power-off switch, disconnection switch or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.
- Do not work alone when working with high voltage components.
- Power should always be disconnected from the system when removing or installing main system components, such as the serverboard, memory modules and the DVD-ROM and floppy drives (not necessary for hot-swappable drives). When disconnecting power, you should first power down the system with the operating system and then unplug the power cords from all the power supply modules in the system.
- When working around exposed electrical circuits, another person who is familiar with the power-off controls should be nearby to switch off the power, if necessary.
- Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they come into contact with.
- Do not use mats designed to decrease electrostatic discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.
- The power supply power cord must include a grounding plug and must be plugged into grounded electrical outlets.
- Serverboard battery: CAUTION - There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarities This battery must be replaced only with the same or an equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

- Please handle used batteries carefully. Do not damage the battery in any way; a damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Please comply with the regulations set up by your local hazardous waste management agency to dispose of your used battery properly.

- DVD-ROM laser: CAUTION - this server may have come equipped with a DVD-ROM drive. To prevent direct exposure to the laser beam and hazardous radiation exposure, do not open the enclosure or use the unit in any unconventional way.

2-5 General Safety Precautions

- Keep the area around the chassis clean and free of clutter.

- Place the chassis top cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.

- While working on the system, do not wear loose clothing such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.

- Remove any jewelry or metal objects from your body, which are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.

- After accessing the inside of the system, close the system back up and secure it to the rack unit with the retention screws after ensuring that all connections have been made.

2-6 System Safety

Electrostatic discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards. The following measures are generally sufficient to neutralize this difference before contact is made to protect your equipment from ESD:

- Do not use mats designed to decrease electrostatic discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.

- Use a grounded wrist strap designed to prevent static discharge.
- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

Chapter 3

Chassis Components

3-1 Overview

This chapter describes the most common components included with your chassis. Some components listed may not be included or compatible with your particular chassis model. For more information, see the installation instructions detailed later in this manual.

3-2 Components

Chassis

The chassis includes eight 2.5" hard drive bays, and one slim DVD-ROM drive. (On some chassis models, the DVD-ROM is an optional item). For the latest shipping lists, visit our Web site at: http://www.supermicro.com.

This chassis accepts a 1U backplane, four fans (with an optional fifth fan) and one or two power supplies. SC113M models come in black.

Backplane

Each SC113M chassis comes with a 1U SAS/SATA backplane. For more information regarding compatible backplanes, view the appendices found at the end of this manual. In addition, visit our Web site for the latest information: http://www.supermicro.com.

Fans

The SC113M chassis accepts four system fans and provides space for two additional fans if required. System fans for the SC113M chassis are powered from the serverboard. These fans are 1U high and are powered by 4-pin connectors.

Mounting Rails

The SC113M can be placed in a rack for secure storage and use. To setup your rack, follow the step-by-step instructions included in this manual.

Power Supply

Each SC113M chassis model includes a high-efficiency power supply rated at 360 or 560 Watts. In the unlikely event your power supply fails, replacement is simple and can be done without tools.

Air Shroud

Air shrouds are shields, usually plastic, that channel air directly to where it is needed. Always use the air shroud included with your chassis.

3-3 Where to get Replacement Components

Although not frequently, you may need replacement parts for your system. To ensure the highest level of professional service and technical support, we strongly recommend purchasing exclusively from our Supermicro Authorized Distributors/ System Integrators/Resellers. A list of Supermicro Authorized Distributors/System Integrators/Reseller can be found at: http://www.supermicro.com. Click the Where to Buy link.

Chapter 4

System Interface

4-1 Overview

There are several LEDs on the control panel as well as others on the drive carriers to keep you constantly informed of the overall status of the system as well as the activity and health of specific components. Most SC113M models have three push-buttons on the control panel: a UID button, a reset button and an on/off switch. This chapter covers these buttons, and explains the meanings of all LED indicators and the appropriate responses you may need to take.

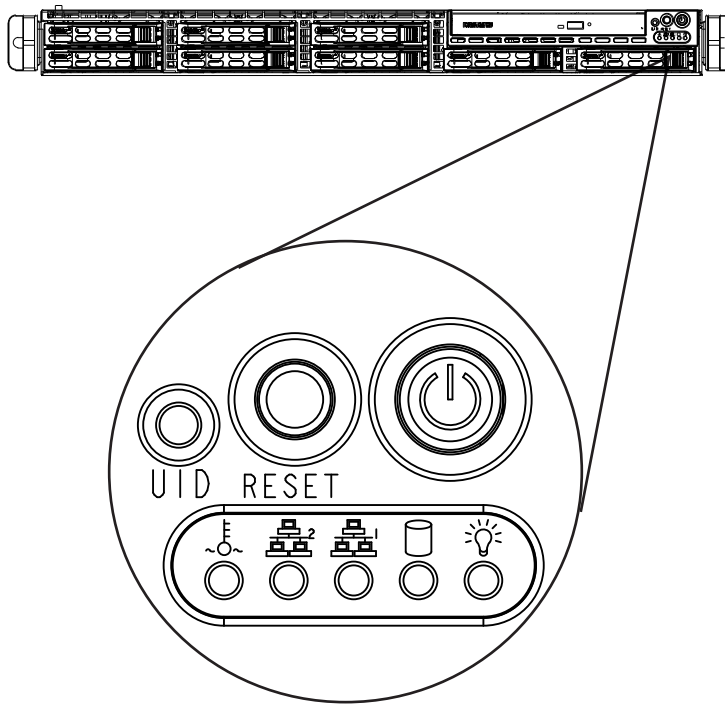
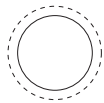


Figure 4-1: Chassis User Interface

4-2 Control Panel Buttons

There are three push-buttons located on the front of the chassis. These are (in order from left to right) a reset button and a power on/off button.

- UID: Depressing the UID (unit identifier) button illuminates an LED on both the front and rear of the chassis for easy system location in large stack confi gurations. The LED will remain on until the button is pushed a second time. Another UID button on the rear of the chassis serves the same function. This button has an LED built into it, which will illuminate when either the front or rear UID button is pushed.



- **Reset:** The reset button is used to reboot the system.

- **Power:** The main power switch is used to apply or remove power from the power supply to the server system. Turning off system power with this button removes the main power but keeps standby power supplied to the system. Therefore, you must unplug system before servicing.

4-3 Control Panel LEDs

The control panel located on the front of the SC113M chassis has five LEDs. These LEDs provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.

- **Overheat/Fan Fail:** When this LED flashes it indicates a fan failure. When continuously on (not flashing) it indicates an overheat condition, which may be caused by cables obstructing the airflow in the system or the ambient room temperature being too warm. Check the routing of the cables and make sure all fans are present and operating normally. You should also check to make sure that the chassis covers are installed. Finally, verify that the heatsinks are installed properly. This LED will remain flashing or on as long as the overheat condition exists.

- **NIC2:** Indicates network activity on GLAN2 when flashing.

- **NIC1:** Indicates network activity on GLAN1 when flashing.

- **HDD:** Indicates IDE channel activity. SAS/SATA drive and/or DVD-ROM drive activity when flashing.

- **Power:** Indicates power is being supplied to the system's power supply units. This LED should normally be illuminated when the system is operating.

4-4 Drive Carrier LEDs

Your chassis uses SAS or SATA, but not both at the same time.

SAS/SATA Drives

Each SAS/SATA drive carrier has two LEDs.

- **Green:** Each Serial ATA drive carrier has a green LED. When illuminated, this green LED (on the front of the SATA drive carrier) indicates drive activity. A connection to the SATA backplane enables this LED to blink on and off when that particular drive is being accessed.
- **Red:** The red LED indicates a SAS/SATA drive failure. If one of the SAS/SATA drives fail, you should be notified by your system management software.

Chapter 5

Chassis Setup and Maintenance

5-1 Overview

This chapter covers the steps required to install components and perform maintenance on the SC113M chassis. The only tool you will need to install components and perform maintenance is a Phillips screwdriver, and under certain circumstances, a hex wrench. Print this page to use as a reference while setting up your chassis.

5-2 Installation

The following sections will provide you with information on installing components and performing general mainenance on the system.

Installation:
Removing the Chassis Cover
Installing Hard Drives
Installing the DVD-ROM Drive
Installing the Motherboard
Installing the Air Shroud
Checking the Air Flow

General Maintenance
System Fans
Power Supply
Removing the Backplane
Installing the Backplane

Review the warnings and precautions listed in the manual before setting up or servicing this chassis. These include information in Chapter 2: System Safety and the warning/precautions listed in the setup instructions.

5-3 Removing the Chassis Cover

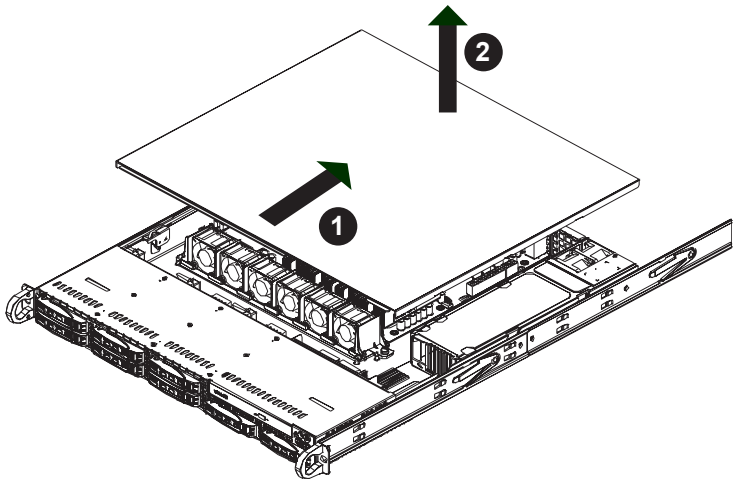


Figure 5-1: Removing the Chassis Cover

Removing the Chassis Cover the Chassis Cover:

1. Slide the cover toward the rear of the chassis.
2. Lift the cover upwards and off of the chassis.

Warning: Except for short periods of time, do NOT operate the server without the cover in place. The chassis cover must be in place to allow proper airflow and prevent overheating.

5-4 Installing Hard Drives

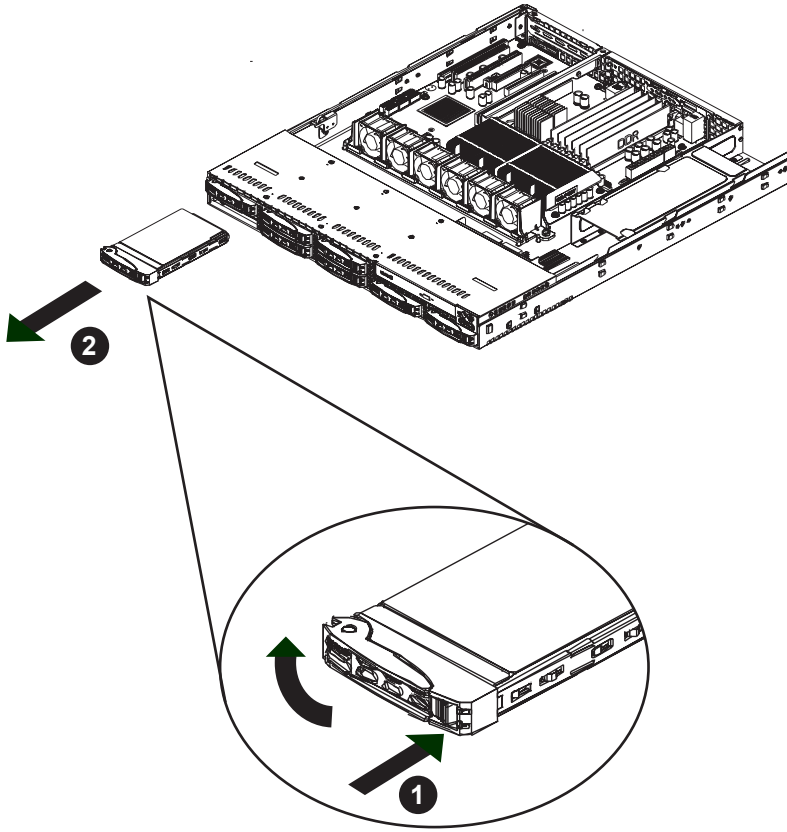


Figure 5-2: Removing Hard Drive Tray

The SC113M accepts eight hot-swappable 2.5" hard drives. Only SAS or enterprise HDDs are recommended.

Removing Hard Drive Trays from the Chassis

1. Press the release button on the drive carrier. This extends the drive bay handle.

2. Use the handle to pull the drive out of the chassis.

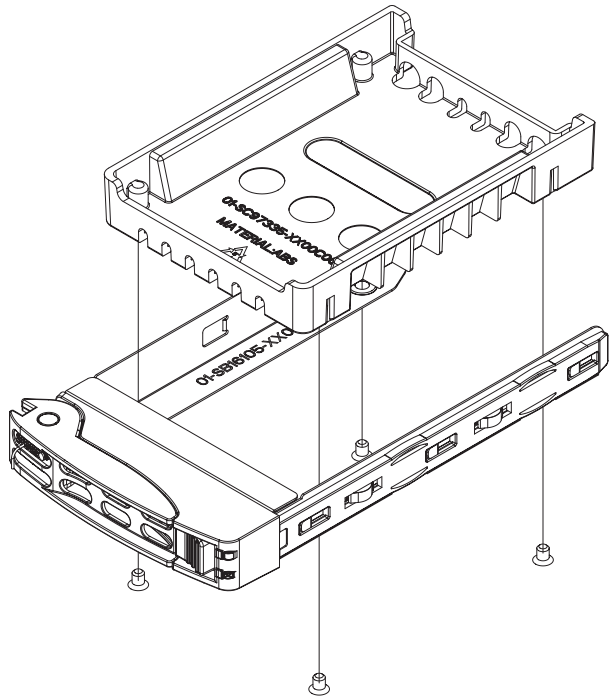


Figure 5-3: Chassis Drive Tray

Installing a Hard Drive into a Drive Carrier

1. Insert a drive into the carrier with the PCB side facing down and the connector end toward the rear of the carrier.

2. Align the drive in the carrier so that the screw holes of both line up. Note that there are holes in the carrier marked “SATA” to aid in correct installation.

3. Secure the drive to the carrier with four screws as illustrated below.

4. Insert the drive carrier into its bay, keeping the carrier oriented so that the hard drive is on the top of the carrier and the release button is on the right side. When the carrier reaches the rear of the bay, the release handle will retract.

5. Push the handle in until it clicks into its locked position

5-5 Installing the DVD-ROM Drive

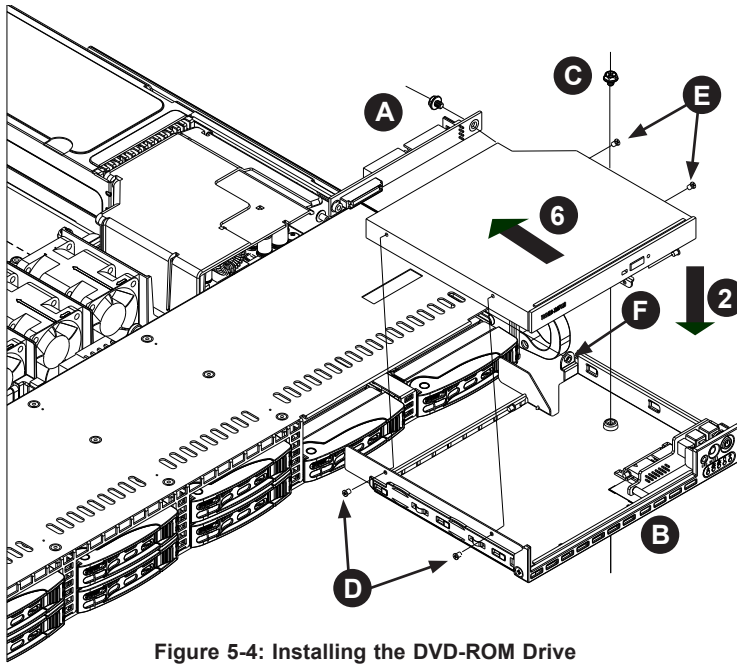


Figure 5-4: Installing the DVD-ROM Drive

The SC113M chassis includes one slim DVD-ROM drive.

Installing the DVD-ROM Drive

1. Attach the backplate (A) to the rear of the DVD-ROM drive using the two screws provided.

2. Place the DVD-ROM drive in the the drive carrier (B).

3. Secure the DVD-ROM drive to the floor of the drive carrier using one screw (C) as illustrated.

4. Secure the left side of the DVD-ROM drive by inserting screws (D) through the drive carrier and into the DVD-ROM drive as shown.

5. Repeat step 3 on the right side of the drive carrier, securing the DVD-ROM drive to the carrier using the screws (E) as shown above.

6. Secure the drive carrier to the chassis using the screw (F) as shown above.

7. Carefully slide the DVD-ROM drive and carrier unit into the chassis.

5-6 Installing the Motherboard

Installing the Motherboard

1. Review the documentation that came with your motherboard. Become familiar with component placement, requirements, precautions, and cable connections.

2. Open the chassis cover.

3. As required by your motherboard, install standoffs in any areas that do not have a permanent standoff. To do this:
   a. Place a hexagonal standoff screw through the bottom the chassis.
   b. Secure the screw with the hexagon nut (rounded side up).

4. Lay the motherboard on the chassis aligning the permanent and optional standoffs

5. Secure the motherboard to the chassis using the rounded, Phillips head screws. Do not exceed eight pounds of torque when tightening the screws.

6. Secure the CPU(s), heatsinks, and other components to the motherboard as described in the motherboard documentation.

7. Connect the cables between the motherboard, backplane, chassis, front panel, and power supply, as needed. Also, the fans may be temporarily removed to allow access to the backplane ports.

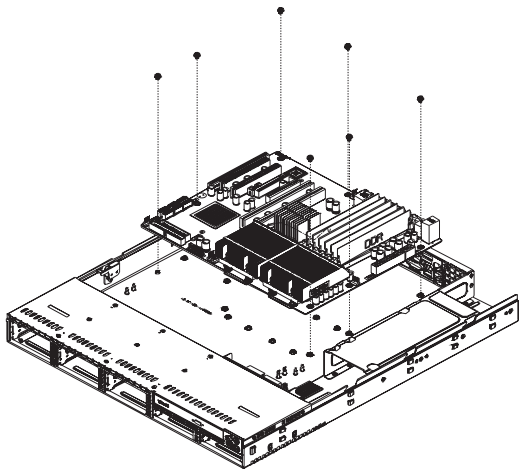


Figure 5-5: Installing the Motherboard

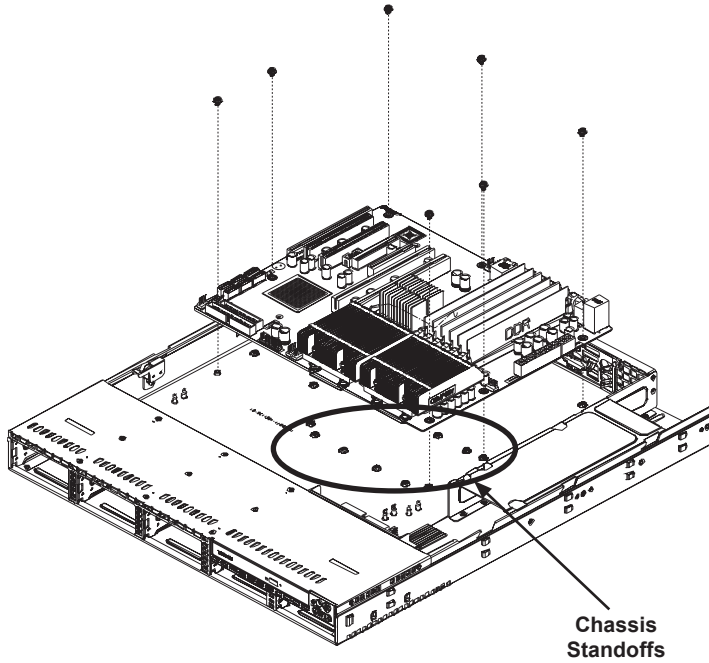


Figure 5-6: Chassis Standoffs

Permanent and Optional Standoffs

Standoffs prevent short circuits by securing space between the motherboard and the chassis surface. The SC113M chassis includes permanent standoffs in locations used by most motherboards. These standoffs accept the rounded Phillips head screws included in the SC113M accessories packaging.

Some motherboards require additional screws for heatsinks, general components and/or non-standard security. Optional standoffs are included for these motherboards. To use an optional standoff, you must place the hexagonal screw through the bottom the chassis and secure the screw with the hexagon nut (rounded side up). Compare the mounting holes in the motherboard to those in the chassis and add or remove standoffs as needed.

5-7 Installing the Air Shroud

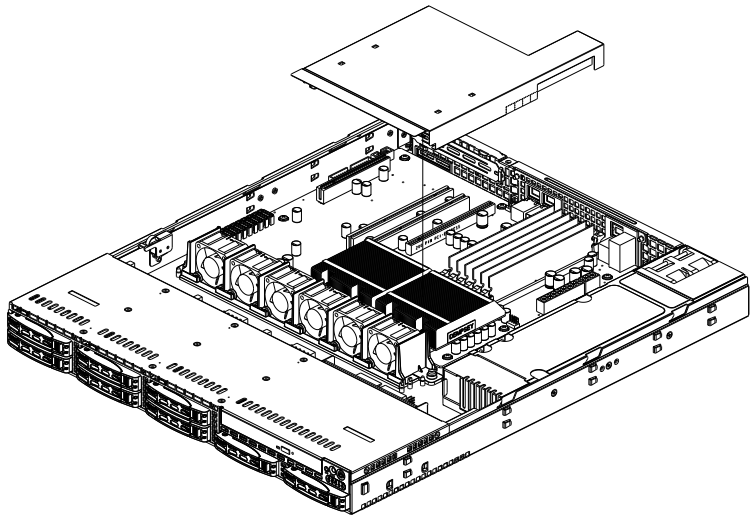


Figure 5-7: Air Shroud Installation

Air shrouds concentrate airflow to maximize fan efficiency. The SC113M chassis air shroud does not require screws to set up.

Installing the Air Shroud

1. Lay the chassis on a flat, stable surface and remove the chassis cover.
2. If necessary, move any cables that interfere with the air shroud placement.
3. Place the air shroud in the chassis. The air shroud fits behind the bank of six fans in the fan rack. Slide the air shroud into the grooves just behind the fan rack.

5-8 Checking the Air Flow

Checking the Server's Air Flow

1. Make sure there are no objects to obstruct airflow in and out of the server. In addition, if you are using a front bezel, make sure the bezel's filter is replaced periodically.

2. Do not operate the server without drives or drive trays in the drive bays. Use only recommended server parts.

3. Make sure no wires or foreign objects obstruct air flow through the chassis. Pull all excess cabling out of the airflow path or use shorter cables.

The control panel LEDs inform you of system status. See “Chapter 3: System Interface” for details on the LEDs and the control panel buttons.

Installation Complete

In most cases, the chassis power supply and fans are pre-installed. If you need to install fans or a power supply, continue to the following sections of this chapter. If the chassis will be installed into a rack, skip to the next chapter for rack installation instructions.

5-9 System Fans

The SC113M chassis includes four heavy-duty fans with open slots for two additional fans to provide cooling for the chassis. These fans circulate air through the chassis as a means of lowering the chassis internal temperature.

Replacing a System Fan

1. If necessary, open the chassis while the power is running to determine which fan requires changing. (Never run the server for an extended period of time with the chassis open.)

2. Turn off the power to the system and unplug the system from the outlet.

3. Remove the failed fan's power cord from the motherboard.

4. Remove the screws securing the fan tray to the chassis.

5. Gently push upward from the underside of the fan, sliding it out through the opening in the top of the fan tray.

6. Place the new fan into the vacant space in the housing. Make sure that the arrows on the top of the fan (indicating air direction) point in the same direction as the arrows on the other fans.

7. Power up the system and check that the fan is working properly before replacing the chassis cover.

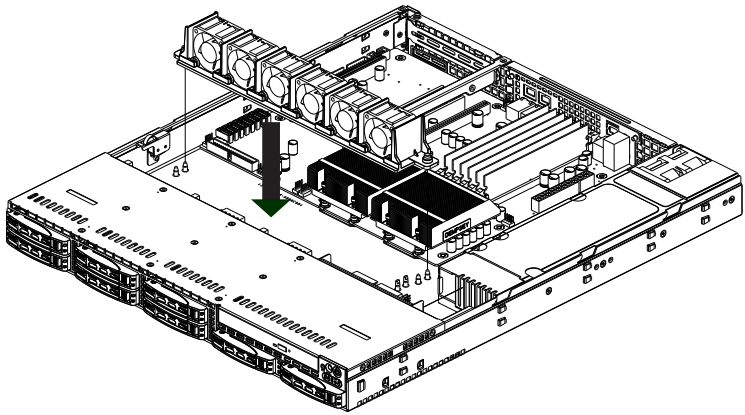


Figure 5-8: Installing the Fan Tray into the Chassis

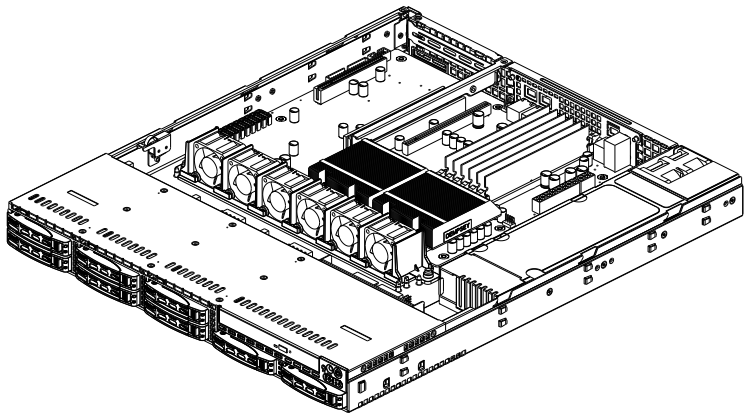


Figure 5-9: Fan Tray Secured to the Chassis

5-10 Power Supply

The SC113M chassis has a 360 or 560 Watt power supply. This power supply is auto-switching capable. This enables it to automatically sense and operate at a 100v to 240v input voltage. An amber light will be illuminated on the power supply when the power is off. An illuminated green light indicates that the power supply is operating.

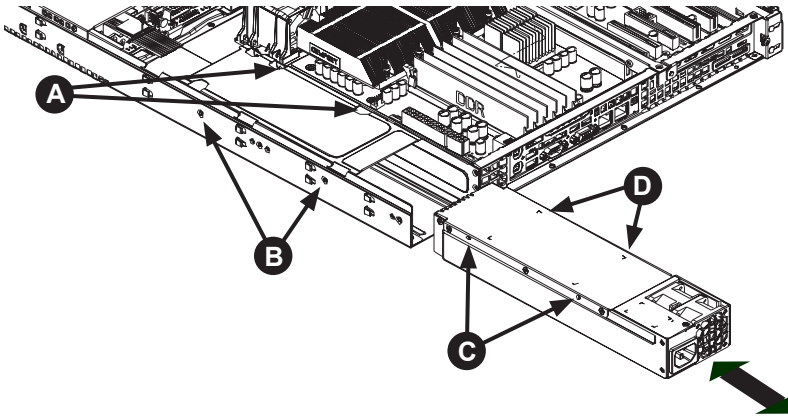


Figure 5-10: Replacing the Power Supply

Changing the Power Supply

1. Power down the server and unplug the AC power cord.
2. Remove the two screws (A), located on the cover of the power supply bay. Set the screws aside for later use.
3. Remove the two screws (B), located on the side of the power supply bay and set them aside for later use.
4. Gently slide the power supply out the back of the chassis.
5. Replace the failed power module with another of the same model.
6. Slide the new power supply module into the power supply bay.
7. Align the holes on the side of the power supply (C), with the holes in the side of the power supply bay (B) and align the holes on the top of the power supply (D) with the holes in the cover of the power supply bay (A).
8. Plug the AC power cord into the back of the module and power up the server.

5-11 Removing the Backplane

The SC113M chassis backplane is located behind the hard drives and in front of the front system fans. In order to change jumper settings on the backplane, it may be necessary to remove the backplane from the chassis.

Removing the Backplane from the Chassis

1. Power down and unplug the system from any power source.
2. Disconnect the cabling to the backplane.
3. Remove the five upper screws at the top of the backplane, indicated by the arrows below.
4. Lift the backplane up and out of the chassis.

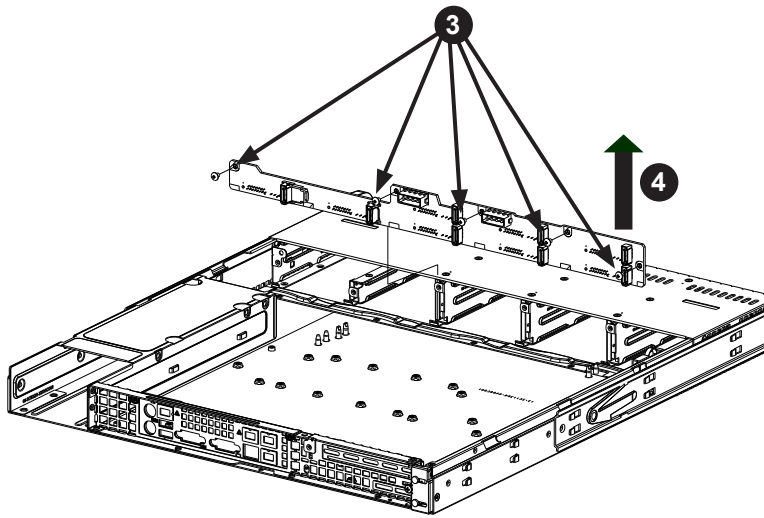


Figure 5-11: Removing the Screws at the Top of the Backplane

5-12 Installing the Backplane

Installing the Backplane into the Chassis

1. Lower the backplane into the chassis sliding it into the clips on the floor of the chassis and aligning the mounting holes in the backplane, with the mounting holes in the chassis.

2. Secure the backplane to the chassis with the four screws provided.

3. Connect the wiring to the backplane.

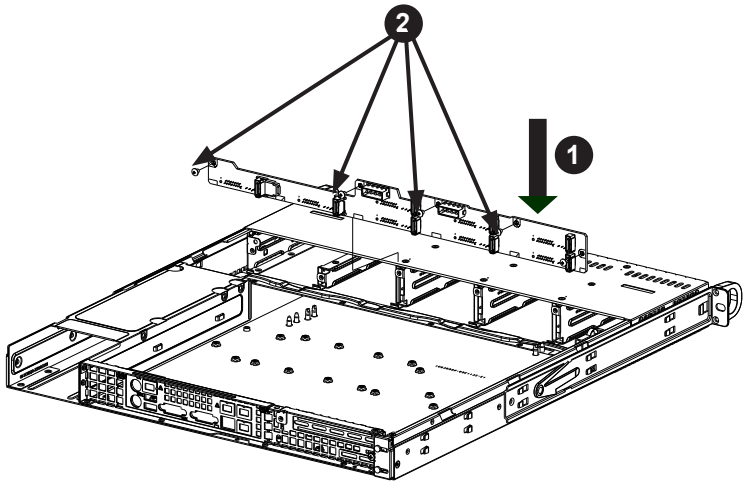


Figure 5-12: Installing the Backplane

Chapter 6

Rack Installation

6-1 Overview

This chapter provides a quick setup checklist to get your chassis up and running. Following these steps in the order given should enable you to have the system operational within a minimum amount of time.

6-2 Unpacking the System

You should inspect the box the chassis was shipped in and note if it was damaged in any way. If the chassis itself shows damage you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold your chassis. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Be sure to read the Rack and Server Precautions in the next section.

6-3 Preparing for Setup

The box your chassis was shipped in should include two sets of rail assemblies, two rail mounting brackets and the mounting screws you will need to install the system into the rack. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

Choosing a Setup Location

- Leave enough clearance in front of the rack to enable you to open the front door completely (~25 inches).
- Leave approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.
- This product is for installation only in a Restricted Access Location (dedicated equipment rooms, service closets and the like).

Warnings and Precautions!

Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In single rack installation, stabilizers should be attached to the rack.
- In multiple rack installations, the racks should be coupled together.
- Always make sure the rack is stable before extending a component from the rack.
- You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.

General Server Precautions

- Review the electrical and general safety precautions that came with the components you are adding to your chassis.
- Determine the placement of each component in the rack *before* you install the rails.
- Install the heaviest server components on the bottom of the rack first, and then work up.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Allow the hot plug hard drives and power supply modules to cool before touching them.
- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

Rack Mounting Considerations

Ambient Operating Temperature

If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the ambient temperature of the room. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (Tmra).

Reduced Airflow

Equipment should be mounted into a rack so that the amount of airflow required for safe operation is not compromised.

Mechanical Loading

Equipment should be mounted into a rack so that a hazardous condition does not arise due to uneven mechanical loading.

Circuit Overloading

Consideration should be given to the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Reliable Ground

A reliable ground must be maintained at all times. To ensure this, the rack itself should be grounded. Particular attention should be given to power supply connections other than the direct connections to the branch circuit (i.e. the use of power strips, etc.).

6-4 Rack Mounting Instructions

This section provides information on installing the SC113M chassis into a rack unit with the rails provided. There are a variety of rack units on the market, which may mean the assembly procedure will differ slightly. You should also refer to the installation instructions that came with the rack unit you are using.

NOTE: This rail will fit a rack between 26" and 33.5" deep.

Identifying the Sections of the Rack Rails

The chassis package includes two rack rail assemblies in the rack mounting kit. Each assembly consists of two sections: an inner fixed chassis rail that secures directly to the server chassis and an outer fixed rack rail that secures directly to the rack itself.

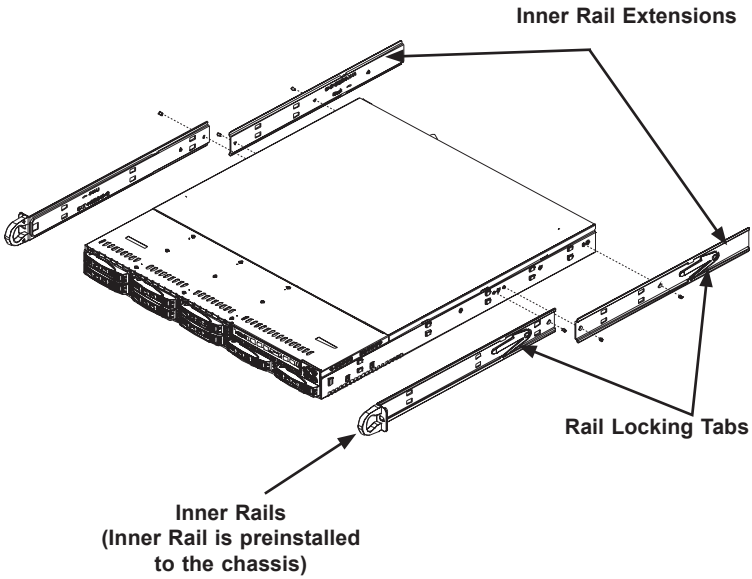


Figure 6-1: Identifying the Sections of the Rack Rails

Locking Tabs

Both chassis rails have a locking tab. The tabs lock the server into place when installed and pushed fully into the rack. These tabs also lock the server in place when fully extended from the rack. This prevents the server from coming completely out of the rack when you pull it out for servicing.

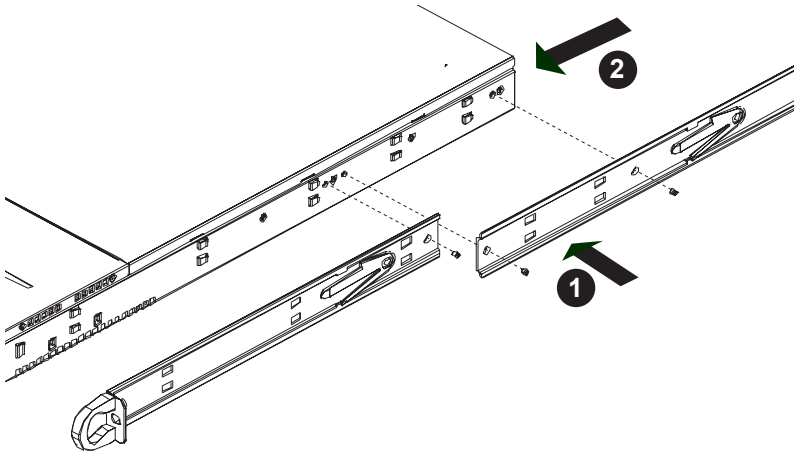


Figure 6-2: Identifying the Sections of the Rack Rails (right side rail shown)

The Inner Rail Extension

The inner rails are pre-attached and do not interfere with normal use of the chassis if you decide not to use a server rack. Attach the inner rail extension to stabilize the chassis within the rack. If you are not using a rack, you do not have to install the inner rail extensions.

Installing the Inner Rails

1. Place the inner rack extensions on the side of the chassis aligning the hooks of the chassis with the rail extension holes. Make sure the extension faces "outward" just like the pre-attached inner rail.

2. Slide the extension toward the front of the chassis.

3. Secure the chassis with two screws as illustrated. Repeat steps for the other inner rail extension.

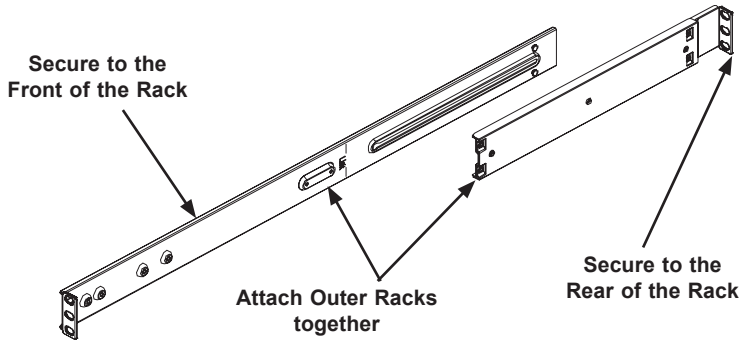


Figure 6-3: Assembling the Outer Rails

Outer Rack Rails

Outer rails attach to the server rack and hold the server in place. The outer rails for the SC113M chassis extend between 30 inches and 33 inches.

Installing the Outer Rails to the Rack

1. Attach the short bracket to the outside of the long bracket. You must align the pins with the slides. Also, both bracket ends must face the same direction.

2. Adjust both the short and long brackets to the proper distance so that the rail fits snugly into the rack.

3. Secure the long bracket to the front side of the outer rail with two M5 screws and the short bracket to the rear side of the outer rail with three M5 screws.

4. Repeat steps 1-4 for the left outer rail.

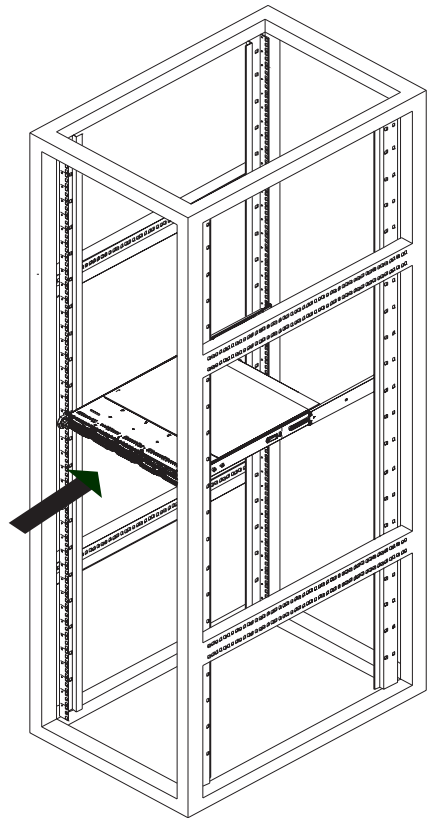


Figure 6-4: Installing into a Rack

Installing the Chassis into a Rack

1. Confirm that chassis includes the inner rails and rail extensions. Also, confirm that the outer rails are installed on the rack.

2. Line chassis rails with the front of the rack rails.

3. Slide the chassis rails into the rack rails, keeping the pressure even on both sides (It may be necessary to depress the locking tabs when inserting). When the server has been pushed completely into the rack, you should hear the locking tabs "click".

4. (Optional) Insert and tightening the thumbscrews that hold the front of the server to the rack.

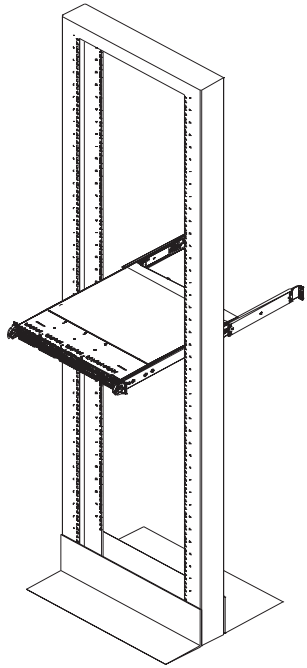


Figure 6-5: Installing into an Open Rack

Installing the Chassis into a Mid-Mount Position (Telco) Rack

1. Use the two L-shaped brackets on either side of the chassis (four total).

2. Determine how far the chassis will extend out the front of the rack. Larger chassis should be positioned to balance the weight between front and back. If a bezel is included on your server, remove it.

3. Attach the two front brackets to each side of the chassis, then the two rear brackets positioned with just enough space to accommodate the width of the telco rack.

4. Finish by sliding the chassis into the rack and tightening the brackets to the rack.

Appendix A

SC113M Chassis Cables

A-1 Overview

This appendix lists supported cables for your chassis system. It only includes the most commonly used components and configurations. For more compatible cables, refer to the manufacturer of the motherboard you are using and our Web site at: www.supermicro.com.

A-2 Cables Included with SC113M Chassis

SC113MTQ-560CB			
Part #	**Type**	**Length**	**Description**
CBL-0157L	Round Ribbon Cable	40cm	8-pin to 8-pin ribbon cable for SGPIO
CBL-0191L	Ribbon, Round Cable	50cm	20 pin to 20 pin front control cable
CBL-0277L	HDD Cable	43cm	48cm SATA round S-RA cable
CBL-0206L	SATA Cable	48cm	SATA round S-S cable

A-4 Compatible Cables

These cables are compatible with the SC113M Chassis.

This section lists cables included with the SC113M Chassis packages.

Alternate SAS/SATA Cables

Some compatible motherboards have different connectors. If your motherboard has only one SAS connector that the SAS/SATA cables must share, use one of the following cables. These cables must be purchased separately.

Cable Name: SAS Cable **Quantity:** 1

Part #: CBL-0175L
Alt. Name: "Big Four"

Description: This cable has one SFF-8484 (32 pin) connector on one end and 4 SAS connectors (7 pins each) at the other. This cable connects from the host (motherboard or other controller) to the backplane SAS hard drive port.

Cable Name: SAS Cable **Quantity:** 1

Part #: CBL-0116
Alt. Name: iPass or "Small Four"

Description: This cable has one ipass (SFF-8087/mini-sas) connector (36 pins) at one end and 4 SAS connectors on one end. This cable connects from the host (motherboard or other controller) to the backplane SAS hard drive port.

Extending Power Cables

Although Super Micro chassis are designed with to be efficient and cost-effective, some compatible motherboards have power connectors located in different areas.

To use these motherboards you may have to extend the power cables to the mother boards. To do this, use the following chart as a guide.

Power Cable Extenders		
Number of Pins	**Cable Part #**	**Length**
24 pin	CBL - 0042	7.9"(20 CM)
20 pin	CBL - 0059	7.9"(20 CM)
8 pin	CBL - 0062	7.9"(20 CM)
4 pin	CBL - 0060	7.9"(20 CM)

Front Panel to the Motherboard

The SC113M chassis includes a cable to connect the chassis front panel to the motherboard. If your motherboard uses a different connector, use the following list to find a compatible cable.

Front Panel to Motherboard Cable (Ribbon Cable)		
Number of Pins (Front Panel)	**Number of Pins (Motherboard)**	**Cable Part #**
16 pin	16 pin	CBL - 0049
16 pin	20 pin	CBL - 0048
20 pin	20 pin	CBL - 0047
16 pin	Split*	CBL - 0068
20 pin	Split*	CBL - 0067

* Split cables: Use these cables if your motherboard has different pin definitions than a Supmicro motherboard.

Notes

Appendix B
SC113M Power Supply Specifications

This appendix lists power supply specifications for your chassis system.

SC113MTQ-560CB	
	560W
MFR Part #	PWS-562-1H
Rated AC Voltage	100-240V 60-50Hz 6.5 - 2.6 Amp
+5V standby	2 Amp
+12V	46.5 Amp
+5V	15 Amp
+3.3V	15 Amp
-12V	0.5 Amp

SC113MTQ-360CB	
	360W/400W
MFR Part #	PWS-361-1H
Rated AC Voltage	100-240 VAC 60-50Hz 4.8 - 2.7 Amp
+5V standby	4 Amp
+12V	29 Amp (at 100 - 140 VAC), 32.5 (at 180 - 240 VAC)
+5V	20 Amp
+3.3V	20 Amp
-12V	0.5 Amp

Notes

Appendix C

SAS-113TQ Backplane

To avoid personal injury and property damage, carefully follow all the safety steps listed below when accessing your system or handling the components.

C-1 ESD Safety Guidelines

Electrostatic Discharge (ESD) can damage electronic components. To prevent damage to your system, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from ESD.

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing a component from the antistatic bag.
- Handle the backplane by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the backplane and peripherals back into their antistatic bags when not in use.

C-2 General Safety Guidelines

- Always disconnect power cables before installing or removing any components from the computer, including the SAS-113TQ backplane.
- Disconnect the power cable before installing or removing any cables from the backplane.

- Make sure that the SAS-113TQ backplane is securely and properly installed on the motherboard to prevent damage to the system due to power shortage.

C-3 An Important Note to Users

- All images and layouts shown in this user's guide are based upon the latest PCB revision available at the time of publishing. The card you have received may or may not look exactly the same as the graphics shown in this manual.

C-4 Introduction to the SAS-113M Backplane

The SAS-113M backplane has been designed to utilize the most up-to-date technology available, providing your system with reliable, high-quality performance.

This manual reflects SAS-113M Revision 1.02, the most current release available at the time of publication. Always refer to the Supermicro Web site at www.supermicro.com for the latest updates, compatible parts and supported configurations.

Jumper Settings and Pin Definitions

C-5 Front Connectors and Jumpers

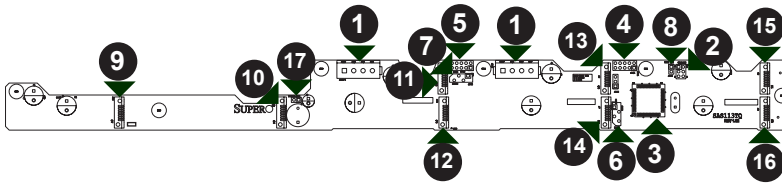


Figure C-1: Front Jumpers and Connectors

Front Connectors and Jumpers

1. Power Connectors (4-pin) JP10, JP13
2. Upgrade Pin JP46
3. MG9072 Chip
4. Sideband #1 JP51
5. Sideband #2 JP52
6. I^2C Connector #1 JP44
7. I^2C Connector #2 JP45
8. MG9072 Reset JP29
9. Connector #7 J16
10. Connector #6 J14
11. Connector #5 J12
12. Connector #4 J10
13. Connector #3 J8
14. Connector #2 J7
15. Connector #1 J6
16. Connector #0 J5
17. Buzzer Reset

C-6 Front Connector and Pin Definitions

#1. Backplane Main Power Connectors

The 4-pin connectors, designated JP10 provide power to the backplane. See the table on the right for pin definitions.

Backplane Main Power 4-Pin Connector

Pin#	Definition
1	+12V
2 and 3	Ground
4	+5V

#2 Upgrade Connector

The Upgrade connector, designated JP46, serves a diagnostic purpose. This connector should be used by a certified and experienced technician.

#3. MG9072 Chip

The MG9072 is an enclosure management chip that supports the SES-2 controller and SES-2 protocols.

#4 and #5. Sideband Headers

The sideband headers are designated JP51 and JP52. For SES-2 to work properly, you must connect an 8-pin sideband cable. See the table to the right for pin definitions.

Sideband Headers

Pin #	Definition	Pin #	Definition
2	SDIN/ Backplane Addressing (SB5)	1	Controller ID (SB6)
4	SDOUT/I^2C Reset (SB4)	3	GND (SB2)
6	GND (SB3)	5	SLOAD/ SDA (SB1)
8	Backplane ID (SB7)	7	SCLOCK/ SCL (SB0)
10	No Connection	9	No Connection

#6 and #7. I²C Connectors

The I²C connectors, designated JP44 and JP45, are used to monitor HDD activity and status. See the table on the right for pin definitions.

I²C Connector Pin Definitions

Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection

#8. MG9072 Reset

Allows the MG9072 chip to be reset.

#9 - #16. Connectors

Connectors 0 through 7.

#17. Buzzer Reset

Allows the buzzer to be reset.

C-7 Front Jumper Locations and Pin Definitions

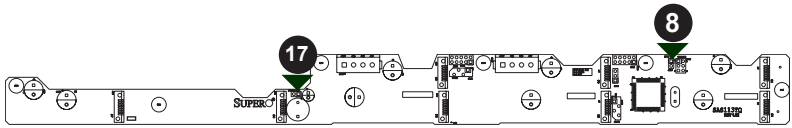
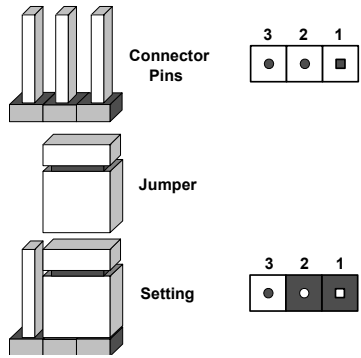


Figure C-2: Front Jumpers

Explanation of Jumpers

To modify the operation of the backplane, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. Note: On two pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.



Jumper Settings		
Jumper	**Jumper Settings**	**Note**
JP18	Open: Enabled* Closed: Disabled*	Buzzer reset*
JP29	Open: Default Closed: Reset	MG9072 chip reset

*The buzzer sound indicates that a condition requiring immediate attention has occurred.

The buzzer alarm is triggered by the following conditions:

1. Hard drive failure
2. Fan failure
3. System temperature over 45º Celsius

I²C and SGPIO Modes and Jumper Settings

This backplane can utilize I²C or SGPIO. SGPIO is the default mode and can be used without making changes to your jumpers. The following information details which jumpers must be configured to use I²C mode or restore your backplane to SGPIO mode.

Jumper Settings			
Jumper	**I²C Jumper Setting**	**SGPIO Jumper Setting**	**Note**
JP33	2-3	1-2	Controller ID

Front LED Indicators

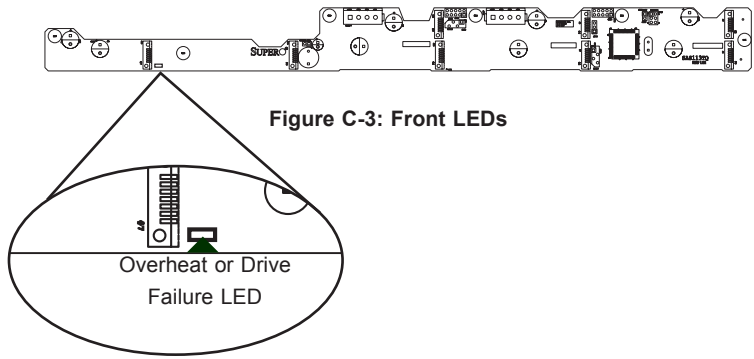


Figure C-3: Front LEDs

Front Panel LEDs		
LED	**State**	**Specification**
D3	On	Overheat or Drive Failure

C-8 Rear Connectors and LED Indicators

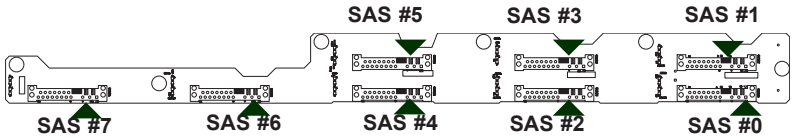


Figure C-4: Rear Connectors

Rear SAS/SATA Connectors		
Rear Connector	**Connector Number**	**SAS Drive Number**
SAS/SATA #0	J1	SAS/SATA HDD #0
SAS/SATA #1	J2	SAS/SATA HDD #1
SAS/SATA #2	J3	SAS/SATA HDD #2
SAS/SATA #3	J4	SAS/SATA HDD #3
SAS/SATA #4	J9	SAS/SATA HDD #4
SAS/SATA #5	J11	SAS/SATA HDD #5
SAS/SATA #6	J13	SAS/SATA HDD #6
SAS/SATA #7	J15	SAS/SATA HDD #7

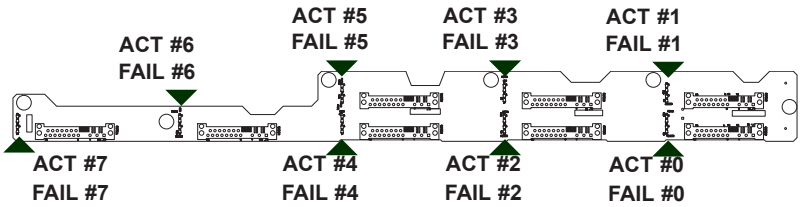


Figure C-5: Rear LEDs

Rear LED Indicators		
Rear Connector	**Hard Drive Activity**	**Failure LED**
SAS/SATA #0	D12	D5
SAS/SATA #1	D13	D6
SAS/SATA #2	D14	D7
SAS/SATA #3	D15	D8
SAS/SATA #4	D18	D19
SAS/SATA #5	D21	D20
SAS/SATA #6	D22	D23
SAS/SATA #7	D25	D26

Notes

Disclaimer (cont.)

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